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Capabilities & Limitations Report

Produced as input to Army's Rapid Materiel Equipping Initiatives
For the
Permethrin-treated Battle Dress Uniforms (BDU's)



for 
JAMES R. MYLES
Brigadier General(P), US Army
Commanding

16 March 2005
Date Signed

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1. Executive Summary. ATEC concurs with the Office of the Surgeon General (OTSG) position supporting the proposal to factory treat BDU's, DCU's and ACU's with permethrin (reference paragraph 10a). This procedure will help safely protect the fighting force against insect borne disease and seamlessly incorporate a crucial element of the DOD Integrated Pest Management System.

2. Data Sources. This assessment is based on previous studies and investigations by multiple federal and commercial agencies

a. Testing. Previous studies and investigations by multiple federal and commercial agencies cited in references, paragraphs 10a thru 10f, below.

b. Test Limitations. There are some gaps in the toxicity and exposure data for permethrin. There are no ultra-long term human studies.

3. Introduction.

a. Purpose. This report provides an assessment of the capabilities and limitations and safety concerns of the permethrin-treated BDU.

b. Mission Need. There is a continuous need to better protect the fighting force against insect borne disease globally.

c. System Description. Permethrin is a synthetic reproduction of a naturally occurring insect repellant. Permethrin is the most effective clothing impregnant available. Its primary mode of action is contact toxicity, particularly against crawling arthropods such as ticks, chigger mites, fleas, and lice. Permethrin also acts as a contact repellent against mosquitoes, biting flies, and to a lesser degree, kissing bugs. It is odorless, nonirritating, and resistant to washing and wear abrasion (rubbing off). Permethrin is bound so strongly to most fabrics that detergent and water will not remove it.

4. Capabilities and Limitations.

a. Capabilities.

(1) Permethrin is bound so strongly to the fabric that water will not remove it. One treatment is effective in preventing mosquito bites through the fabric for over 50 launderings.

(2) Permethrin will not wash out of treated uniforms when worn in the rain or when fording streams.

(3) The Committee on Toxicology of the National Research Council believes there are sufficient data to conclude that the wearing of permethrin impregnated uniforms will not lead to adverse health effects in military personnel.

b. Limitations.

(1) Permethrin does not evaporate; therefore, it does not provide protection to exposed skin adjacent to treated clothing.

(2) Dry-cleaning will totally remove the permethrin.

(3) The figure below depicts the existing DoD policy, combining the application of permethrin onto the uniform and insect repellent onto exposed skin to achieve maximum protection.

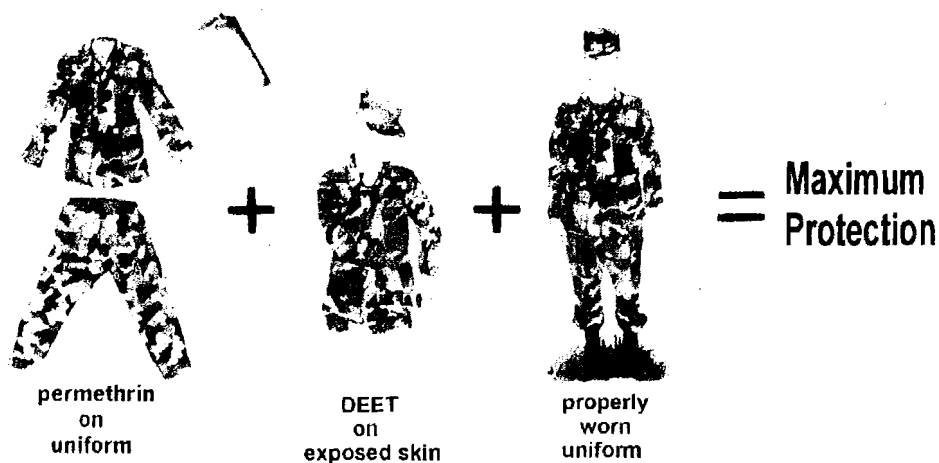


Figure: DoD Insect Repellent System

5. Safety. The uniform cap, physical training uniforms, and underwear, including undershirts, should not be treated with permethrin. No significant transfer of permethrin from treated to untreated uniforms occurs during laundering. The Centers for Disease Control and Prevention recommend pregnant women use permethrin impregnated clothing to reduce the risk of insect-borne disease.

6. Training. Not applicable.

7. Supportability. Not applicable.

8. Survivability. Not applicable.

9. Recommendation. Treat BDU's, DCU's and ACU's with permethrin at point of manufacture to provide a safe and effective way of preventing a variety of insect-borne diseases.

10. References.

- a. Memorandum, USACCHPM, MCHB-TS-OHH, 16 Aug 2004, subject: Input to Safety Confirmation for the Permethrin Treated Battledress Uniform (BDU), Health Hazard Assessment Program Project No. 69-MP-4540-04.
- b. Memorandum, USADTC, CSTE-DTC-TT-S, 14 June 2004, subject: Safety Confirmation for the Factory Treated Permethrin-Impregnated Battle Dress-Uniform (BDU) in Support of Milestone C (MS C), Full Rate Production (FRP) and Type Classification Standard (TC-Std) Decisions.
- c. DoD Instruction 4715.1, "Environmental Security"
- d. DoD Instruction 4150.7, "DoD Pest Management Program"
- e. Armed Forces Pest Management Board, Technical Guide No. 36, Personal Protective Measures Against Insects and Other Arthropods of Military Significance.
- f. The Yellow Book, Health Information for the International Traveler, 2003-2004, U.S. Centers for Disease Control and Prevention, Traveler's Health-Pregnancy, Breast-Feeding, pp. 71, 96, 102, 126, 158, 162, 176-7, 234, 250.
- g. USEPA, Office of Pesticide Programs, Notice of Pesticide Registration No. 74843-1 (3 Jan 03) and -2 (& Jul 03)
- h. Health Effects of Permethrin-Impregnated Army Battle-Dress Uniform, National Academy Press, National Research Council-Committee on Toxicology, Washington, DC, 1994.